

From: Gary Demoss, *RES*
To: Mark Kirk; William Cullen
Date: 9/19/02 5:52PM
Subject: Davis-Besse

As you all know, I'm responsible for the Accident Sequence Precursor (ASP) analysis for the Davis-Besse (DB) problems. For that analysis, I need to determine the probability that the conditions at DB resulted in a LOCA. I certainly don't know how to determine these probabilities, but I do believe that the analysis would start with two premises:

1. I need to analyze 3 separate and generally independent LOCA sequences:
 - a medium LOCA from rupture of the as found cladding
 - a large LOCA as a result of additional corrosion and cladding rupture
 - a medium LOCA from CRDM ejection

2. Obviously, a LOCA didn't occur - so the basic question reduces to "What is the probability that conditions were enough worse to cause a LOCA?". I don't know what conditions can or will be modeled, but they may include time of through-crack initiation, crack growth rates, corrosion rates (as a function of time, temperature, leak rate, etc.), cladding strength, cladding flaws, etc.

An ASP analysis is theoretically similar to the SDP analysis that Steve Long is doing. However, under our structure, we cannot use the approach that he used for the large LOCA. We are generally comfortable with his approach to the CRDM ejection.

I would like to explore what phenomena can and cannot be modeled with probability distributions, and hopefully we can jointly arrive at ways to use combinations of bounding values and probability distributions to produce defensible initiating event probability estimates.

I would like to meet with the appropriate people in DET to lay the groundwork for this analysis. Hopefully, I can use some of the analyses that you have completed or are planning. If not, maybe I can "tweak" the approach to some analyses that you are doing in the near future. FYI, OERAB has a real deadline for this work. We need to report to Congress whether or not there were any "significant" ASP events (probability of core damage $>1E-3$) in 2002 by early January. I've been told that "not sure" is not an acceptable answer for an event that occurred early in the year.

I hope to meet either individually or in a group with the appropriate DET analysts. I have about a 10 minute presentation that will introduce how OERAB needs to structure this problem - hopefully we can work from there. I'm out tomorrow (Friday), but have essentially no constraints next week.

Thanks,

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CC: Bennett Brady

H-112